orlański

natural warmth of the house

MANUAL AND SERVICE MANUAL

ORLIGNO 100

ISO 14001 ISO 9001 TÜV CERT CE

Content

1. Boiler application 3
2. Installation 4
    2.1. Ventilation 4
    2.2. Supply-air ventilation 4
    2.3. Exhaust ventilation 4
    2.4. Chimney connection 4
3. Technical data 5
    3.1. Dimensions 6
    3.2. Boiler construction 6
    3.3. Safety valve connection 7
4. Boiler startup 9
    4.1. Boiler stoking 10
    4.2. Tarring and condensation 10
5. Maintenance 11

1. Boiler application

Steel boiler ORLIGNO 100 tested according to EN 303-5 is designed for central heating installations with maximal temperature on the boiler 90ºC and working pressure 3 bar.

Recommended fuel for boiler: wood, coke, coal and in case of mounting pellet burner – pellets.

ATTENTION!
Using fuel different than the recommended not guarantees optimum boiler operation and achieving parameters featured in technical data. It can also affect durability of the boiler and its components.

ATTENTION!
Using fuel different than the recommended is treated as wrong boiler operation and resultant performance irregularities cannot be reason for complaint.

2. Installation

2.1. Boiler-room ventilation

According to european safety regulations each boiler room should have supply-exhaust ventilation ensuring correct boiler operation and user's safety . Lack of ventilation or its obstruction is the main reason of incorrect boiler operation (i.e. boiler cannot reach set temperature).Exhaust ventilation removes from boiler room used air and harmful gases. Boiler room with natural draught cannot have installed mechanical ventilation.

2.2. Supply air ventilation

1. Ventilating duct section should have at least 50% area of chimney's section and not less than 20 x 20 cm. Duct should be placed 1m above the floor.
2. Ventilating duct should have installed device for air flow control; device shouldn't limit duct section above 1/5.Ventilating duct should be made of non-inflammable material.

2.3. Exhaust ventilation

1. Exhaust duct should be made of bricks with section of at least 25% of chimney section not less 14 x 14 cm. Inlet hole cannot have any devices that reduce its section. Outlet hole should be placed close to the ceiling led out 1,5 m above the roof. Ventilating duct should be made of non-inflammable material.
2. Height of the boiler room min. 2,2 m.

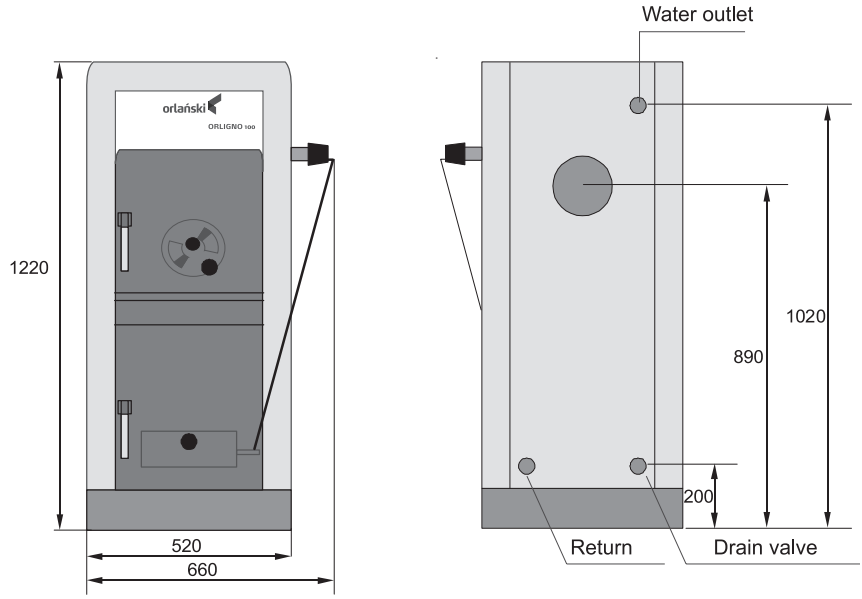
2.4. Chimmey connection.

Chimney ducts should be installed according to binding rules and norms in countries to which boilers are sold. Part of chimney system connection boiler with chimney is called flue. In order to lower flow resistance of exhaust gases this part should lead as a straight pipe with, if necessary, joints up to 45°.
Because of exhaust gases temperature ORLIGNO 100's need to be connected to heat-resistant.
30 cm above the floor closing door should be installed with tight closing.
Chimney section should be round or close to square shape because of low flow resistance.
Minimal flue diameter should be 160 mm.
Chimney should lead above the roof. Chimney outlet location is dependent on roof slope and its combustibility.

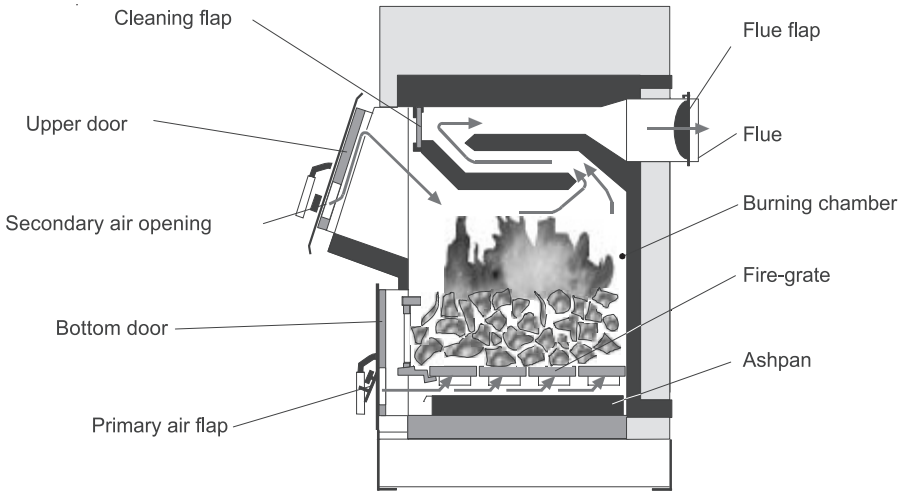
3. ORLIGNO 100 – technical data

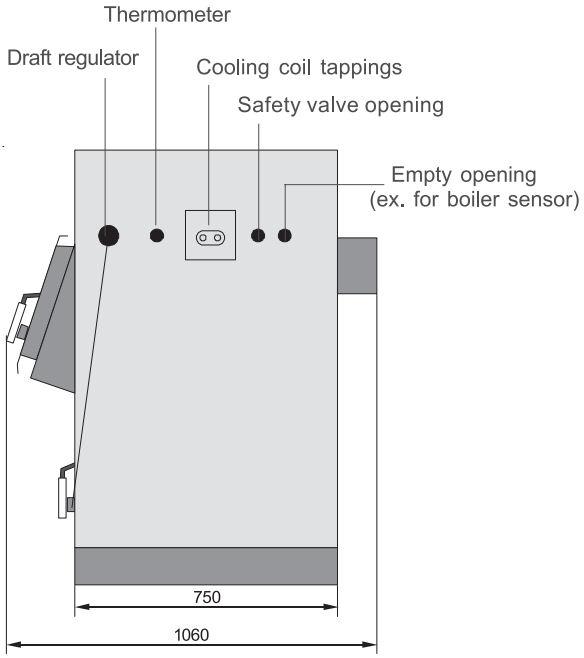
Power	wood Coke/pellets	kW kW	22 30/16
Boiler class acc. to EN-303-5	3		
Efficiency	coke pellets	%	76,5 86
Max working pressure		bar	3
Max temperature		°C	90
Min. temperature		°C	60
Water capacity		ltr.	60
Weight		kg	305
Loading chamber capacity		ltr.	70
Length		mm	1100
Width		mm	675
Height		mm	1220
Upper door dimensions		mm	300x300
Water outlet	inner thread	inch	5/4”
Return	inner thread	inch	5/4”
Drain valve	inner thread	inch	½”
Cooling coil	inner thread	inch	½”
Min. cooling coil pressure		bar	2
Flue diameter		mm	160
Required chimney draft		Pa	20
Max. moisture content:	wood/pellets	%	23/12
Exhaust gases temperature at nominal power		°C	250-280
Burning period at nominal power	coke	h	4,5
	wood	h	2-2,5
Fuel parameters	wood/max length	mm	500
	pellets/ diameter	mm	6-8
Water resistance	Δt=20 K	mbar	0,8
	Δt=10 K	mbar	3,4

3.1. Dimensions

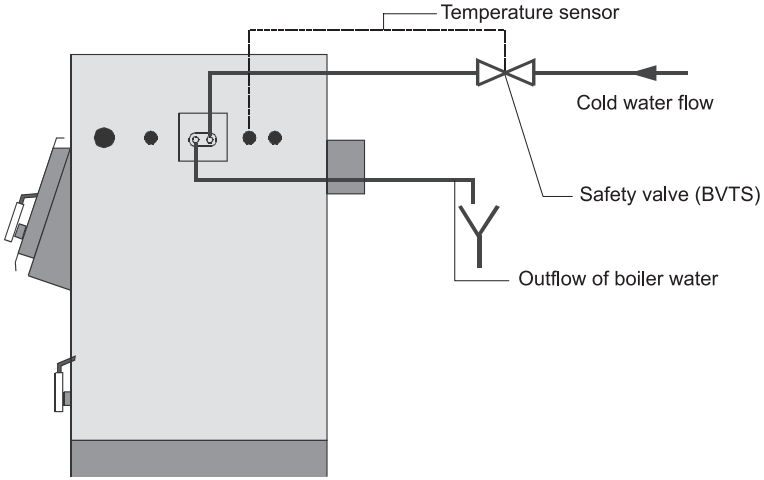


3.2. Boiler construction



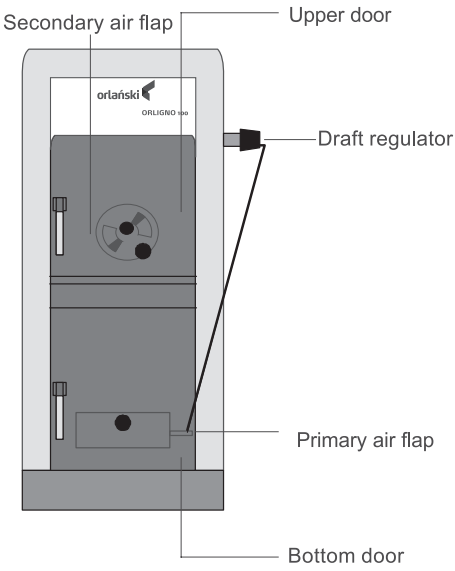


3.3. Safety valve connection



ORLIGNO 100 is equipped with copper cooling coil mounted in boiler body, protecting boiler from overheating. To one of cooling coil tappings on right side of the boiler one should connect safety valve.

When temperature increases above 95ºC safety valve opens and lets in cold water through cooling coil. Water from mains at 10ºC temperature cools down boiler, water from boiler is removed to drain.



4. Boiler startup

Before first startup it is necessary to:
- Check water level in installation, pressure in installation should be 2 bar.
- Check fire-grate location (fire-grate gaps from bottom should be bigger than from top).
- Draft regulator seal with oakum and mount, fit arm and block with screw.

Startup:
- Mount draft regulator horizontally, regulator set on 70°C.
- Open flue flap.
- Put on fire-grate papers and small wood pieces; open bottom door .
- After lightning up put bigger wood logs and create ember layer (close bottom door and unscrew primary air flap – opening in flap at least 2cm- regulation knob is located on bottom door.
- After creating ember layer fully load boiler with wood or coke. Put wood logs along chamber.
- Set chimney draft with flue flap
- Connect draft regulator chain with primary air flap. Burn in boiler up to 70°C then set draft regulator on 70°C and shorten chain till primary air flap is barely opened. Draft regulator knob is for temperature change. Marking on regulator is every 10°C.

ATTENTION!
Before stoking boiler open slowly open upper door to suck out gases.

ATTENTION!
It is not allowed to open bottom door during boiler burning – glow may fall out.

SECONDARY AIR SETTINGS:
- wood opening ½
- coke opening ¼ .

Troubleshooting

Reason	Activity
Heat exchanger gets dirty to fast	Use good quality wood, moisture content 18-23%.
Smoke leakage	Seal chimney pipe, open more flue flap, check chimney draft
Too high temperature of exhaust gases	Check fuel moisture content, cannot be too dry. Check secondary air settings.
Too short burning period	To high exhaust gases temperature: burning period depends on used fuel and heat demand

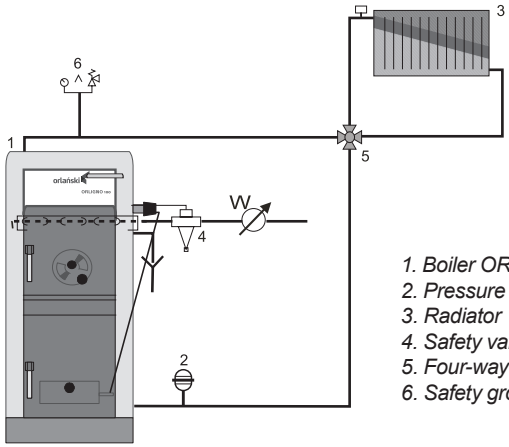
4.1. Boiler stoking

In order to stoke boiler:

1. Close primary air flap.
2. Open completely flue flap.
3. Open slightly upper door in order to suck out gases through chimney.
4. Open completely upper door and stoke boiler.
5. Close upper door, return to previous setting of flue flap and primary air.

4.2. Tarring and condensation

Lightning up in cold boiler may cause that water precipitated from fuel falls on boiler walls and runs down to ash chamber. That may look like boiler leakage. It is important to keep boiler temperature high enough at least 70°C. It is recommended to install four-way mixing valve which protects boiler from low temperature return below 50°C. Too humid wood also causes that boiler works on low temperatures, which leads to tarring. In order to avoid problem of tarring and condensation – keep high boiler temperatures, boiler must be properly sized to heated space to avoid oversizing – boiler then will work on low temperatures.

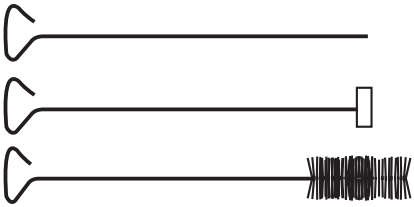


1. Boiler ORLIGNO 100
2. Pressure vessel
3. Radiator
4. Safety valve- protection- from verheating
5. Four-way mixing valve
6. Safety group

5. Maintenance

Advice:
Clean boiler works efficiently. Boiler life is extended.

- Fire-grate and ash clean/remove daily.
- Boiler must be cool during this activities.
- Open upper door and remove cleaning flap.
- Check if heat exchanger surfaces are cleaned, clean with brush.
- Remove ash from bottom chamber (ashpan may be hot).
- Fit cleaning flap.
- Each 2-4 weeks clean boiler depending on burning intensity.



INSTRUCTION MANUAL

Contents

1. Basic informations 13
    1.1. Construction description and burner application 13
    1.2. Fuel characteristics 14
    1.3. Transport and delivery specification. 15
2. Burner's technical data 16
3. Package 17
4. Location and package installation 18
    4.1. Rules, norms, recommendations. 18
    4.2. Boiler room recommendation 19
    4.3. Ventilation 19
    4.4. Safe distance to inflammable substances 19
5. Putting into operation 21
    5.1. Burner start. 21
    5.2. Burner's assembly to ORLIGNO 100 21
    5.3. Adjustment of ORLIGNO 100 to work with pellet burner 21
    5.4. Tank assembly. 23
    5.5. Before starting of the burner it is necessary 24
6. Burner's maintenance 25
7. Troubleshooting 26

1. Basic informations

1.1. Construction description and burner application

Self- cleaning burner is a new look into the automatic burning of solid fuels in Europe – pellets of 6-8 mm of diameter maintaining low emissions, complying with European norms.

Burner doesn't have any drawbacks of chute burners –gravitational, in which ash and sinter have to be removed manually.

Main burner advantage is its simple service: just fill in hopper with pellets and press ON/OFF button. Reports are shown on big graphic display. Within few minutes burner will automatically select work parameters, maintain constant room temperature and hot utility water.

Burner's features:

- automatic burner's start
- automatic modulation
- flame control through photo-cell
- low heat inertness during start and stop
- low electric energy consumption
- possibility to control 16 heating circuits (radiators and underfloor heating or hot utility water) – option
- control of burner's temperature
- three phases of lightning up eliminate risk of explosions
- AUTOSTART function after power failure – memory of last settings
- separation of primary and secondary air – emissions on the same level as in gas and oil burners
- efficiency > 94,5%
- soot = 0
- self-cleaning function, automatically removes ash from the burner's grate

2 years of warranty for appliance durability enables to decrease exploitation and service costs.

Burner's regulator can control:

- boiler pump
- 1-16 heating circuits (radiators or underfloor heating) controlled according to outside temperature
- room's temperature

1.2. Fuel characteristics

a) Pellet granulate made according to DIN 51731

- granulate 5-8 mm
- recommended calorific value 17500-19500 kJ/kg
- ash content 1,5%
- max moisture content 12%
- density 1-1,4 kg/dm^3

ATTENTION!
It is recommended to use fuel from reliable sources. Fuel should have appropriate humidity and low content of small fractions. It is necessary pay attention especially to mechanical pollution (stones), which worsen burning process and may lead to burner's failure.

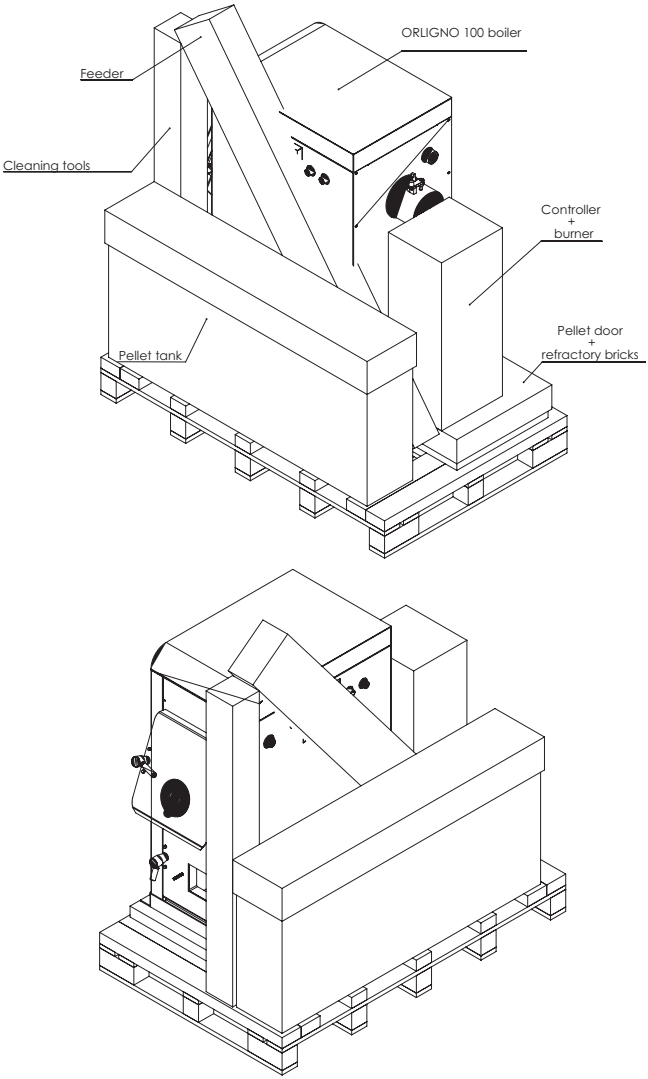
Eko-Vimar Orlański sp. z.o.o. is not responsible for appliance failure or improper burning process when using inappropriate fuel.

1.3. Transport and delivery specification

Burner during transport should be secured with straps against leaning and movement.

Burner need to be stored in roofed and dry place.

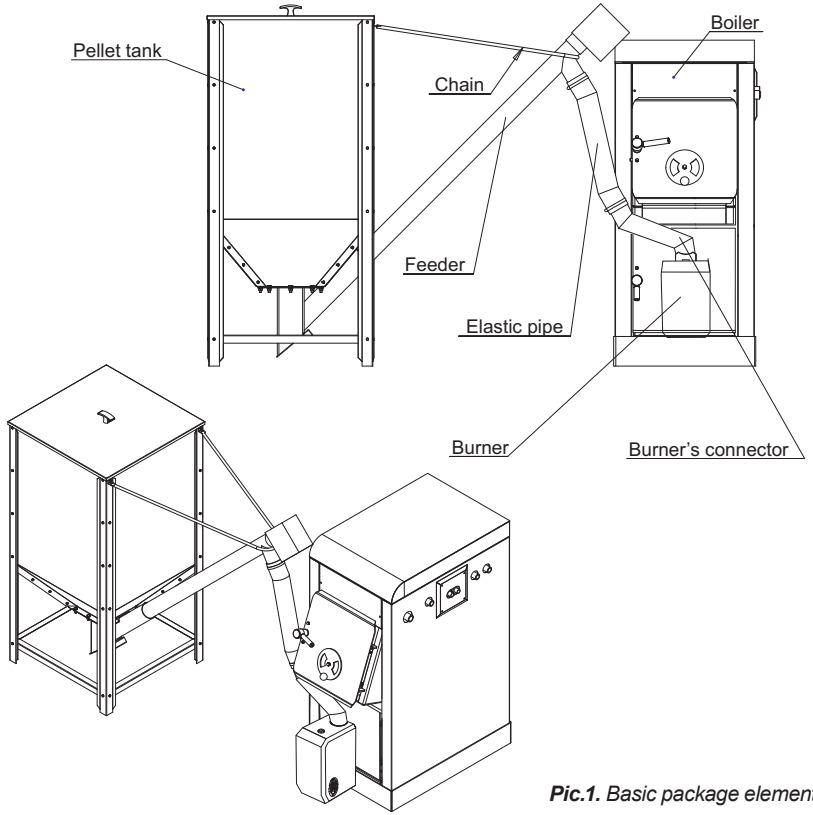
Burner is delivered in separate boxes wrapped in foil. Boxes contains: pellet tank with lid, fuel feeder, burner with controller and elastic feeding pipe. Before installation it is recommended to check delivery completeness and its condition.



2. Burner's technical data

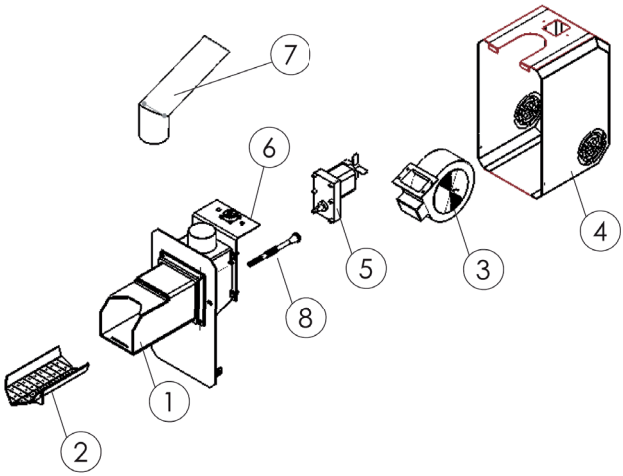
Parameter	SI	16 kW	24 kW
Pellet power range	kW	4 – 16	7-24
Efficiency	%	>94,5	>94,5
CO emission	ppm	<200	<200
Weight	kg	14	14,5
Feeder length standard	m	1,6	1,6
Fuel		pellets	pellets
Fuel diameter	mm	6 – 8	6 – 8
Voltage	V	230	230
Power consumption	W	30	35
Protection level		IP40	IP40
Tank dimensions	mm	1400x790x790	1400x790x790
Capacity	L	485	485

ATTENTION!
Producer reserves the right for construction and documentation changes in order to modernize the boiler.



Pic.1. *Basic package elements.*

1. Burner’s body
2. Grate
3. Fan
4. Burner's casing
5. Motoreducer
6. Plate for electric connections
7. Connector
8. Igniter



Pic.2. *Burner construction*

3. Package

Standard package:

- burner
- controller
- fuel feeder with motoreducer
- tank 450l
- manual
- 4 refractory bricks
- elastic pipe
- band clips
- rubber seal
- ashpan
- iron cust firegrate

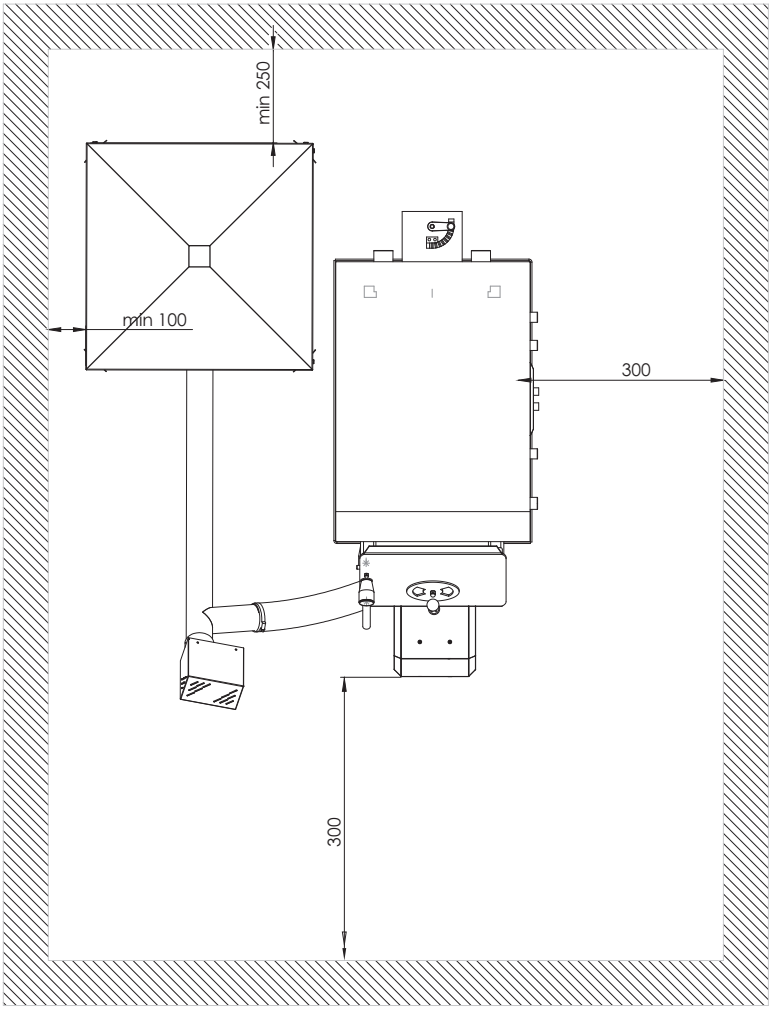
Extra accesories for the controller:

- room sensor
- hot domestic water sensor
- central heating sensor
- external module CAN I/O MC-1 (ex. for solar system, accumulation tank)

4. Location and package installation

4.1. Rules, norms, recommendations

Boiler room should comply with construction law valid in country where boiler is installed.



Pic.3. *Package layout.*

4.2. Boiler room recommendation

- Package (boiler, burner, tank, feeder) should be placed in separate room, centrally to heated rooms
- Front door should open outside and must be made of nonflammable materials, with 0,8 width
- Floor should be made of nonflammable materials or covered with 0,7 mm steel plate at minimum 0,5 m distance to door edges. Boiler should be located on a nonflammable foundation, lifted 0,05 m above floor level
- Boiler room should have artificial lightning but natural light is also recommended
- Distance to walls in boiler room should allow for easy access to all sides of the boiler
- Minimal distance from front side of the boiler to opposite wall should be 1m
- Minimal height of the boiler room: at least 2,2 m; in existing building it is allowed 1,9 m with assured supply-exhaust ventilation.
- It is forbidden to install boiler and burner in damp rooms or with elevated humidity. Corrosion process may in short time damage the boiler and burner.

4.3. Ventilation

- Boiler room should have 200 cm^2 supply-air duct
- Exhaust duct should have at least 14x14 cm section with inlet hole under boiler room ceiling that should lead above roof and be placed near chimney.
- Ventilation ducts should be made of nonflammable materials.
- It is forbidden to install mechanical ventilation

ATTENTION!
High risk of carbon monoxide poisoning exists if boiler is located in a room with insufficient access to fresh air.

4.4. Safe distance to inflammable substances

- During installation and exploitation it is advisable to maintain safe distance of 200 mm from inflammable substances
- For inflammable substances with C3 grade of combustibility which rapidly and easy burn (ex. paper, cardboard, wood, plastic) distance is minimum 400 mm;
- If combustibility grade is unknown safe distance should be doubled.

Combustibility grade of building products	Building products
A – non-burning	sandstone, concrete, bricks, fire plaster, Mortar, tile, granite
B - hard burning	cement board, fiberglass, mineral insulation
C1- hard burning	beech tree, oak tree, plywood
C2 – middle burning	pine, larch, spruce tree, cork, rubber floor cover
C3 – easy burning	tarmac plywood, celuloids, polyurethane, Polystyrene, polyethylene, plastic

User please remember:

- Only adult person acquainted with this manual may operate the burner It is forbidden for kids to stay in close distance to burner without presence of adult person.
- If inflammable gases penetrate boiler room during activities (varnishing, gluing) it is recommended to turn off the burner.
- It is forbidden to use inflammable substances for lightning up the burner, burner will light up automatically.
- High risk of fire exist when using open fire or inflammable substances close to installed boiler package.
- Burner should be turned off during maintenance (position OFF).
- Pay attention on hot burner's surfaces – risk of burn.
- It is forbidden to lay inflammable items on the burner or nearby.
- All defects should be removed at once.
- After heating season it is recommended to clean the burner and pellet tank thoroughly.
- Oversee the burner during power failure
- It is forbidden to manipulate with any electric parts or interfere in burner's construction.

5. Putting into operation

5.1. Burner start

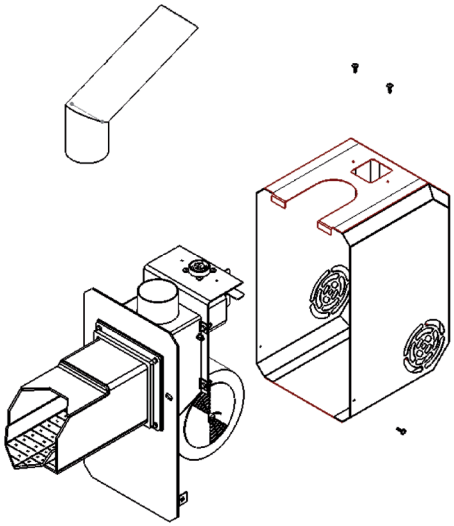
First startup of the burner must be done by authorized company trained by manufacturer with valid certificate of authorized serviceman issued by Eko-Vimar Orlanski ltd.

5.2. Burner's assembly to ORLIGNO 100

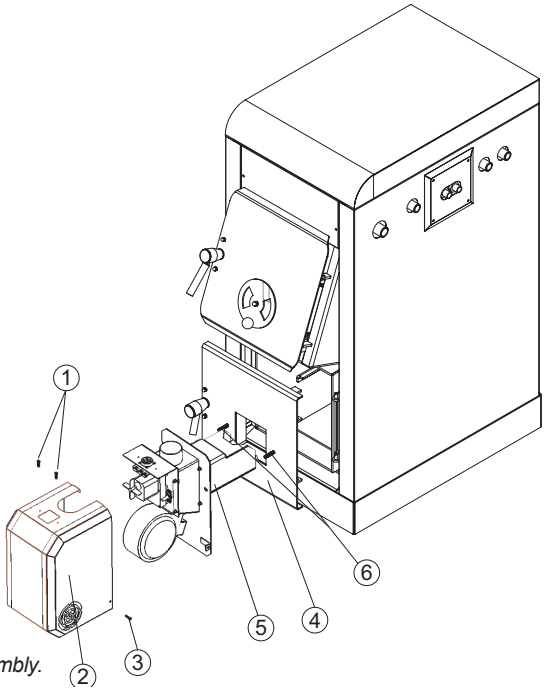
1. Remove the screws (1) and side screws (3) fastened to burner's casing and take off burner's casing (2).
2. Take off ORLIGNO 100 bottom door.
3. Fix adapter (4) in bottom's door place.
4. Fix burner (5) onto adapter's screws (6), block with nuts.
5. Mount burner's casing (2) and fix it with screws (1) and side screws (3).
6. Slide feeder's pipe (7) into fixing pipe (8) (pic.6)
7. Fit flexible pipe (9) on feeder's pipe (7) and secure with band clip (10).
8. Fit metal connector (12) into burner's pipe (11).
9. Fit flexible pipe (9) onto metal connector (12) and secure it with band clip (10).

5.3. Adjustment of ORLIGNO 100 to work with pellet burner

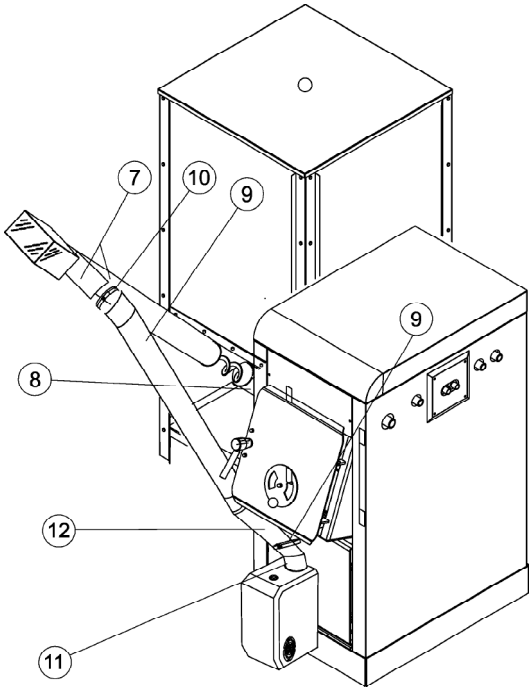
1. Remove iron-cast grate from boiler.
2. Place two refractory bricks on each of two supports above support for iron-cast grate.
   - two bottom bricks push to front,
   - two upper bricks push to back .



Pic.4. *Disassembly of burner's casing.*

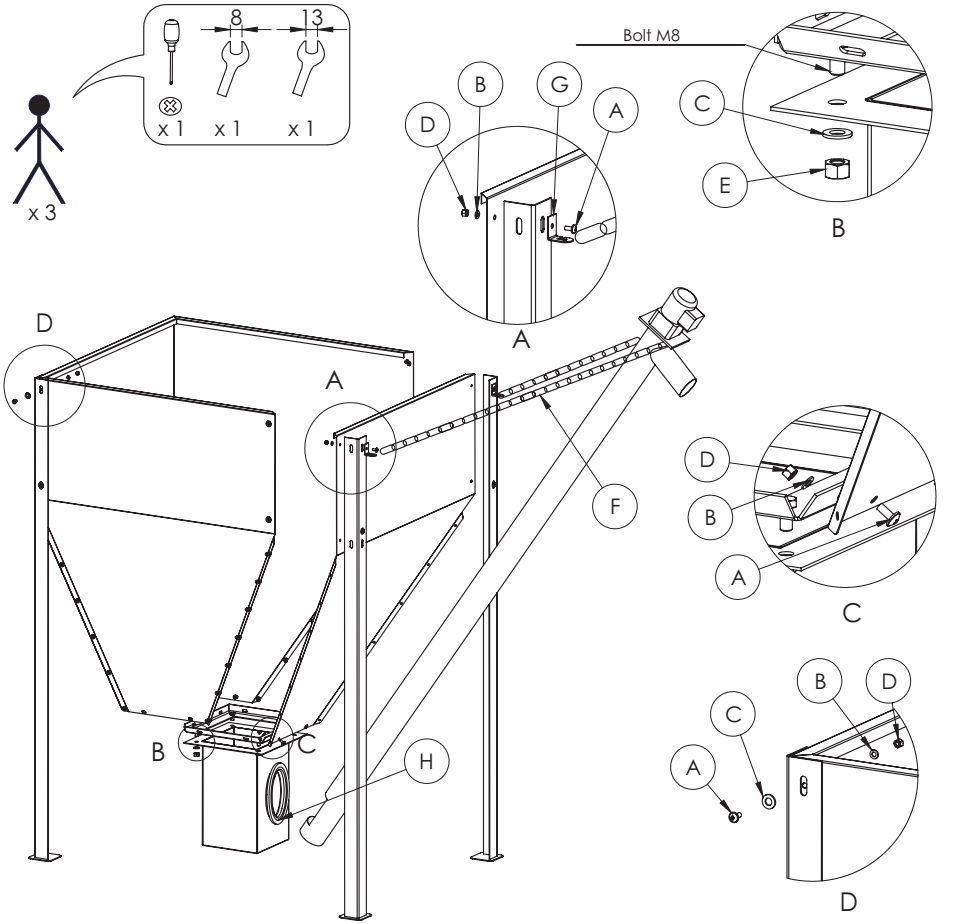


Pic.5. *Burner assembly.*



Pic.6. *Feeder assembly*

5.4. Tank assembly



A x 46 M5 x 12 Bolt	B x 46 M5 Washer	C x 14 M8 Washer	D x 46 M5 Nut
E x 4 M8 Nut	F x 1 Chain	G x 2 Handle	H x 1 Gasket

5.5. Before starting of the burner it is necessary:

1. Check installation condition.
2. Fill in pellet to the tank, cover with lid.
3. Check if fuel contains any unwanted elements (rocks, metal elements).
4. Connect burner's and feeder's plugs.
5. Turn on controller.
6. Feed fuel (SIMPLE MENU: Feed fuel: Yes) from the tank till it shows up on a burner.
7. Turn off fuel feed and hold ON/OFF button - boiler starts automatic lightning up.
8. Burner maintenance after heating season:
   - turn off and disconnect from power supply
   - clean thoroughly
   - remove pellet from tank (clean fixing pipe from remaining pellet ash)
   - clean burner

6. Burner's maintenance

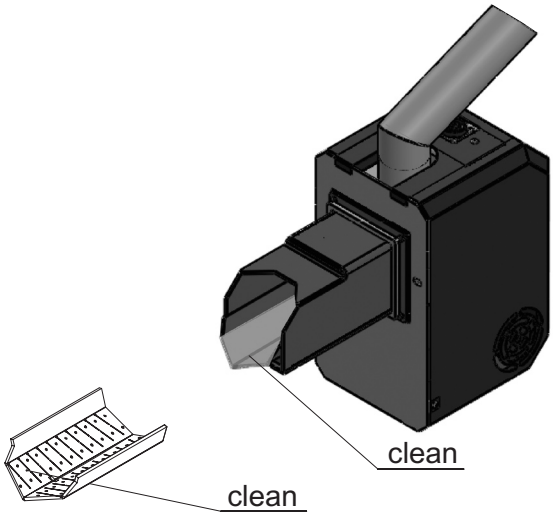
ATTENTION!
It is necessary to put out, cool down and disconnect burner from power supply when servicing.

Pay attention on hot burner's surfaces – risk of burn.

In order to keep high efficiency of burner it is recommended to clean and service it systematically. Remove soot and ash from burner's grate.

Cleaning activities:

1. Turn off the boiler (wait till burner completely put out), disconnect boiler from power supply and wait till boiler cools down.
2. Disconnect burner form boiler and power supply.
3. Remove grate from burner and clean it (check permeability of air holes).
4. Clean burner's casing.



Pic.7. *Burner maintenance.*

7. Troubleshooting

Type of defect	Possible cause of defect	Suggested repair
One of controller's button doesn't work	Display malfunction	Display repair
Automatic lightning up Doesn't work	Wrong connection of igniter or photo-cell	Check plug and wires connections of igniter and photo-cell
	Clogged outlet hole of hot air	Clean heater hole
	Very damp fuel	Change or dry fuel
	Damaged igniter	Replace igniter
	Damaged photo-cell	Replace photo-cell
Smoke from door or burner	Lack of chimney draft	
	Clogged chimney	
	Clogged heat exchanger	Clean heat exchanger
	Damaged sealant (rope)	Replace sealant (rope)
Water in boiler	Lack of chimney draft	Improper chimney installation
	Very damp fuel	Change or dry fuel
	Leaky heat exchanger	To check heat exchanger, turn off boiler on 8 hours, remove water, when water is still in boiler – call service
Boiler cannot reach set temperature	Improperly selected boiler for heating space	Check if boiler is properly selected
	Wrongly located sensor of return water	Check sensor location
	Sensor malfunction	Check sensors
	Set low boiler power	Check feed time and fan power

Controller's manual
Contents

8. Connection - electric scheme 30
9. Overview of the basic functions 32
9.1. Control panel 32
9.1.1 The status LED 32
9.1.2 Buttons 33
9.1.3 Graphic display 34
9.2. Statuses of furnace 34
10. Handling 35
10.1. Navigation in the menu 35
10.2. Starting regulator - ON 35
10.3. Switching off the regulator - OFF 35
10.4. Time scheduling 36
10.5. Service password 37
11. Simple menu 38
11.1. Simple menu screens 38
12. Main menu 40
12.1. Heating 41
12.1.1 Selection of circuit 41
12.1.2 State 41
12.1.3 Settings 42
12.1.4 Time program 42
12.1.5 Service 42
12.2. Hot water 44
12.2.1 Selection of circuit 44
12.2.2 State 44
12.2.3 Settings 45
12.2.4 Time program 45
12.2.5 Service 45
12.3. Buffer 46
12.3.1 State 46
12.3.2 Settings 46
12.3.3 Time program 46
12.3.4 Service 46
12.4. Boiler 47
12.4.1 State 47
12.4.2 Settings 47
12.4.3 Service 47

12.5. Settings 48
12.5.1 Date and time 48
12.5.2 Language 48
12.5.3 General settings. 48
12.5.4 Service 48
12.6. Burner 50
12.6.1 State 50
12.6.2 Settings 51
12.6.3 Service 51
12.7. Alarms 52
12.7.1 Alarm codes 52
12.8. Solar 58
12.8.1 State 58
12.8.2 Settings 58
12.8.3 Service 58
12.9. Info 59
13. Expansion of the system - CAN bus 59
13.1. Sonda Lambda 62
13.2. Solars 64
14. Specification 66

8. Connection - electric scheme

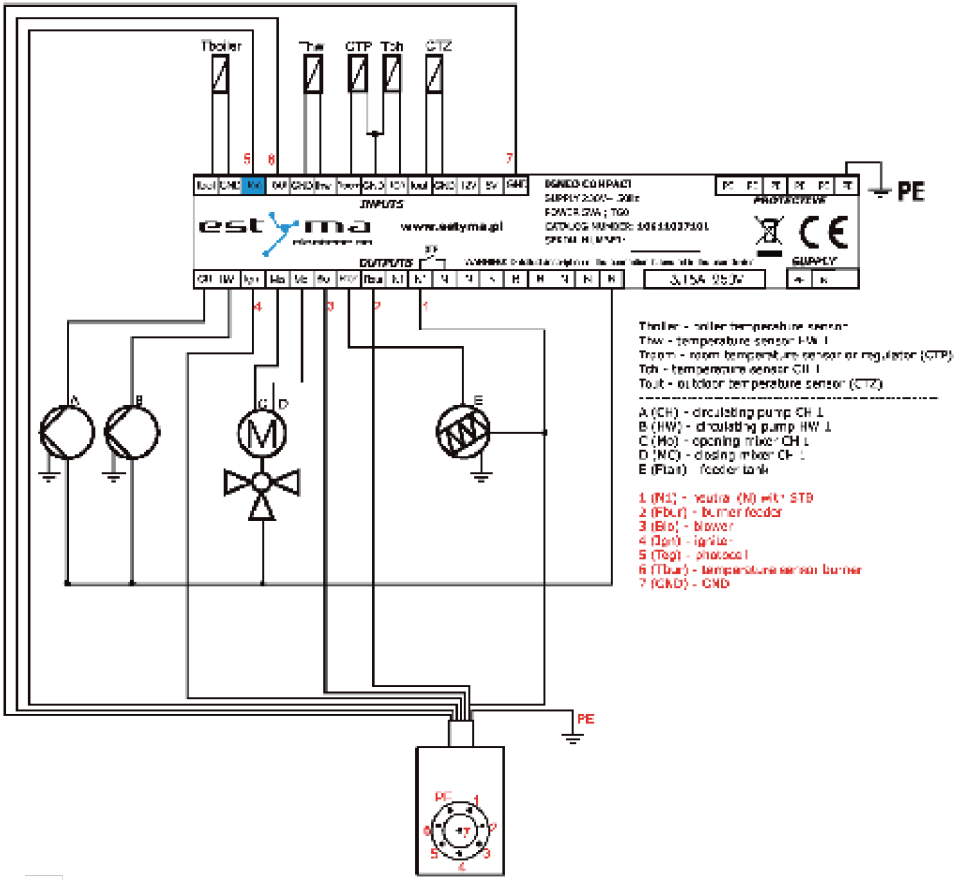
The device supply voltage is ~ 230V/50Hz. Plug the power cord to the controller in accordance with the posted signs.

WARNING!
External sensors for installation control such as hot domestic water HW1 or central heating CH1 are an option. They are not included in standard Orligno 100 package.

Attach to the controller for operating the boiler sensors and actuators as needed. The drawings shows the connection scheme of equipment. In the tables, a description of the inputs and outputs.

WARNING!
Under no circumstances connect the protective conductor (PE) with a neutral (N).

WARNING!
Wiring must be done with the device disconnected from the mains.
Connections should be exercised by a person possessing adequate powers in this regard.

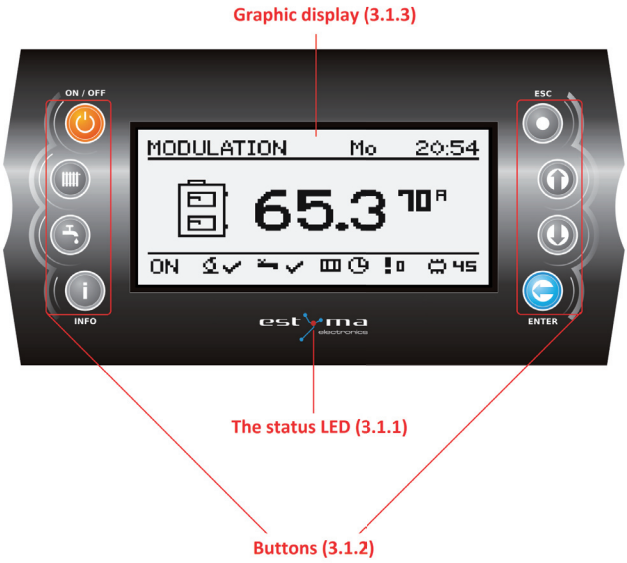


INPUTS	
Description	Explanation
Tboiler	Boiler temperature sensor
5 (Teg)	Photocell
6 (Tbur)	The temperature sensor burner
Thw	The temperature sensor hot water
Troom	Room temperature sensor / regulator (CTP)
Tch	The temperature sensor central heating
Tout	Outdoor temperature sensor (CTZ)
12V	+12V output to supply optional equipment
5V	+5V output to supply optional equipment
7 GND	Mass electric to connect sensors

OUTPUTS	
Description	Explanation
A (CH)	Central heating circulating pump
B (HW)	Circulating pump for hot water
4 (Ign)	Burner igniter
C (Mo)	Opening the central heating mixer
D (Mc)	Closing the central heating mixer
3 (Blo)	Burner blower
E (Ftan)	Feeder tank, or if burning wood, it's blower
2 (Fbur)	Burner feeder
1 (N1)	Neutral separable such as by STB
STB	Protection STB
N	Neutral standing
PE	Protective

9. Overview of the basic functions

9.1. Control panel



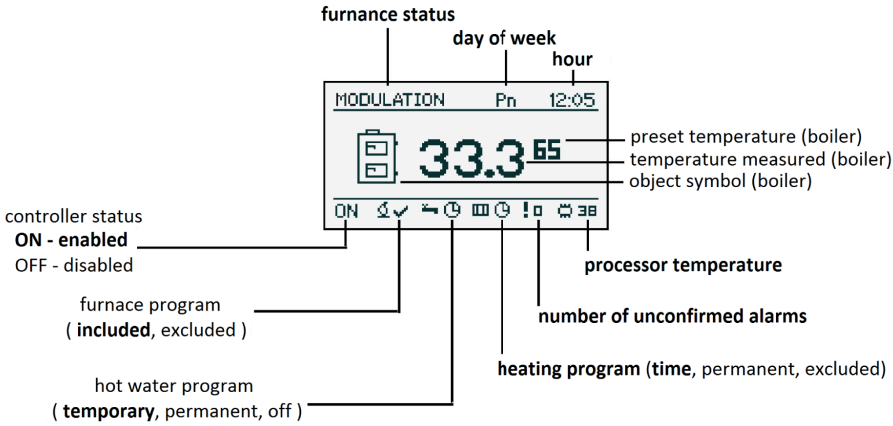
9.1.1 The status LED

Status	Importance
Green light continuously	Controller OFF
Green blinks	Controller enabled, burner OFF
Orange light continuously	Controller enabled, burner enabled
Orange blinks	Burner works
Red light continuously	There is an alarm to be confirmed
Red blinks	Alarm active

9.1.2 Buttons

Button	Function
ON / OFF	Long press on the main screen (>3 seconds) changes the state of the ON/OFF (on/off).
CH	Quick access to the full configuration settings for the central heating.
HW	Quick access to the full configuration settings for hot water.
INFO	Shows the navigation information and descriptions of the regulated parameters.
ESC	Back one level up in the menu, the resignation of the parameter change.
Up arrow	Navigating through the menus, increasing the value of the parameter being edited. On main screen, enter the menu simple.
Down arrow	Navigating through the menus, reducing the value of the parameter being edited. On main screen, enter the menu simple.
ENTER	Access to the menu. Acceptance of changes in the value of the parameter being edited. Confirmation of the alarm.

9.1.3 Graphic display



9.2. Statuses of furnace

Status	Description
TURNED OFF	The burner is not working. Permission to work off.
CLEANING	Cleaning the burner by strong stream of air.
FIRING UP	Firing up fuel. Providing the initial dose of fuel to run igniter and blower.
INCANDESCING	When the flame in phase of the firing up is discovered, starts providing additional portions of fuel and increase the power of blower for arcing furnace.
POWER 1	The burner works with the power first.
POWER 2	The burner works with the power of a second.
MODULATION	The burner works with a modulated power.
BURNING OFF	Quenching of the furnace. Work of burner and blower tray until the complete disappearance of the flame.
Stop	Burner does not work but it is to agree to his work. The required boiler temperature is reached.

10. Handling

10.1. Navigation in the menu

The device has two types of menus: simple and main menus.

Simple menu – allows for quick access to basic controller functions. Enter the menu is simple by pressing the “up arrow“ or “down arrow“ on the main screen. Description of a simple menu in chapter 11.

Main menu – allows you to access all the functionality of the controller (monitoring, adjustments and service settings.) Access to the main menu is done by pressing the button «Confirm, enter» on the main screen. Description of the main menu in Chapter 11.

PBack to the main screen is possible from any screen by pressing the button “Back, esc“ several times.

WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system..

10.2. Starting regulator - ON

To run the controller (ON mode) for 3 seconds to press the „ON / OFF” on the screen when it is in the OFF mode.

10.3. Switching off the regulator - OFF

To turn off the controller (OFF mode) for 3 seconds to press the „ON / OFF” on the screen when he is in the ON mode.

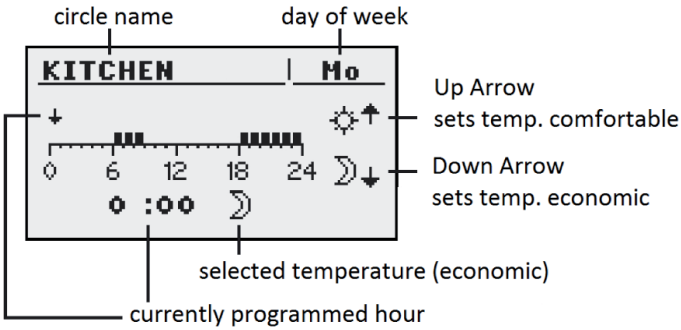
WARNING!
When you turn off the controller, depending on the previous state, the burner can still work (quenching), the state should not be interrupted. If the device is to be excluded from the power supply, wait quenching process, until the status of the burner is „off”.

10.4. Time scheduling

Controller is equipped with a clock and calendar. This makes it possible to program the operation of individual circuit elements for heating depending on the time and day of week. Date and time are not reset during a power failure, because the controller is equipped with a battery that should be replaced every two years.

Programming takes place in the menu of the circuit (eg, hot water, heating, buffer) and for each item carried in the same way.

Selecting the day of week. Upon entry in the „Programme Time" day of the week flashes. Arrow buttons to select the day you want to set or just check the settings of the program. Programming. After selecting the day of week and approved „ENTER", indicator being programmed hours flashes. At the same time also displays the time, and the next to it icon that represents the currently selected setting time (the symbol of the sun means comfort temperature, the moon is a symbol of the economic temperature.) To move to the next hour, press the down arrow (economy temperature) or the up arrow (comfort temperature). If the day is already programmed in accordance with our wish, press „ENTER". After approved the changes (or cancellation) will blink day of the week.



The figure shows an example of the preset day of the week.

Temp. economy from 00:00 to 6:00

Temp. comfortable from 6:00 to 9:00

Temp. economy from 9:00 to 18:00

Temp. comfortable from 18:00 to 24:00

WARNING!
Values of temperatures comfortable and economical are set in the "SETTINGS" menu and may be different for each of the circuits. To make the time program work, you must also enable a timed mode in the "SETTINGS" menu.

10.5. Service password

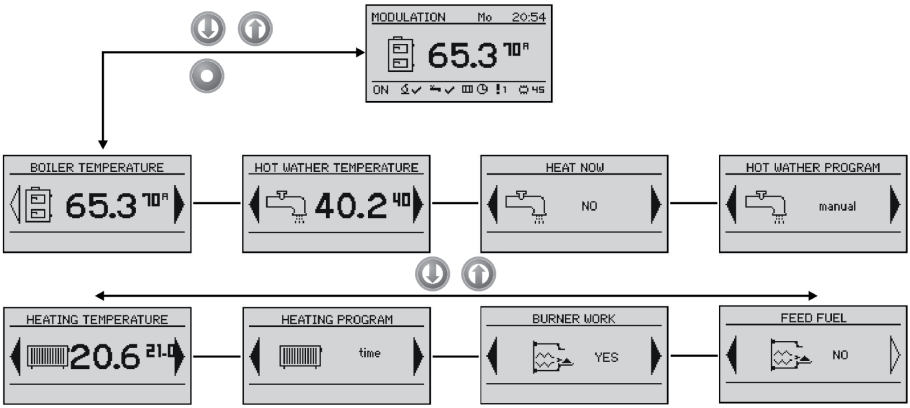
Access to the service parameters are password protected. After entering the correct password, access will be lifted. Access to the service parameters will be locked after a period of 10 minutes without pushing buttons.

Service code is a temperature of the boiler in menu BOILER / SETTINGS and 3 letters"EST".

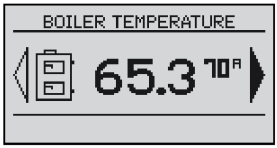
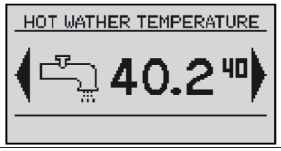
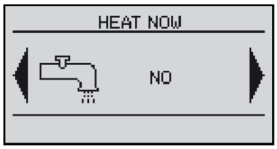
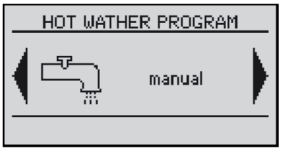
Example: If the temperature of the boiler in menu BOILER / SETTINGS is 60°C, password is: „60EST".

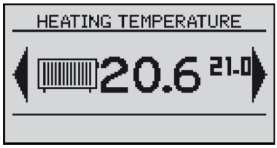
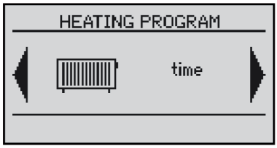
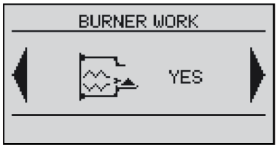
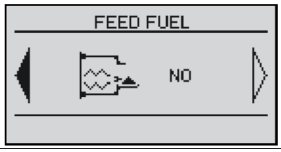
WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

11. Simple menu

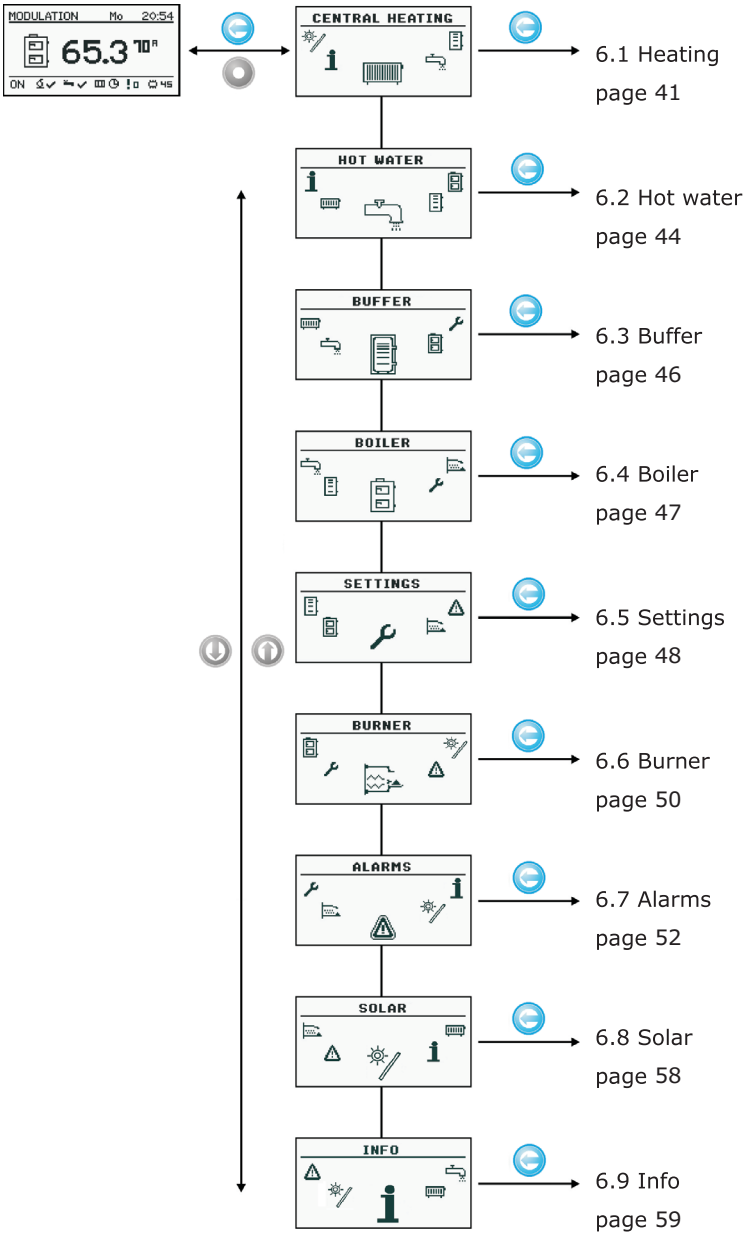


11.1. Simple menu screens

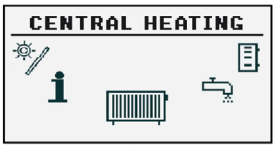
Screen	Description
	Shows the current temperature of the boiler (large font) and the desired temperature (small font). After pressing the„ENTER" set the desired temperature of the boiler.
	Shows the current temperature of hot water (large font) and the desired temperature (small font). After pressing the „ENTER" set the desired temperature of hot water. *Menu relates to the circuit No. 1*
	Disposable heating hot water to a comfortable temperature regardless of the program. *Menu relates to the circuit No. 1*
	Set the mode a hot water: a. time - according to the programmed timescales b. constatant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat *Menu relates to the circuit No. 1*

	Shows the current temperature in the room No 1 (large font) and the value of the desired (small font). After pressing the „ENTER" go to set the desired temperature in the room. *Menu relates to the circuit No. 1*
	Set the mode a heating circuit: a. time - according to preset ranges b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat *Menu relates to the circuit No. 1*
	Allow for operation of the burner. When not consent to the burner operation, regulator controls the heatingsystem, but do not attach the burner.
	Manual start of the fuel feed from the tray. Useful function after the exhaustion of fuel from the cartridge. After refilling the fuel cartridge, run the „enter fuel" until the fuel gets into the burner.

12. Main menu

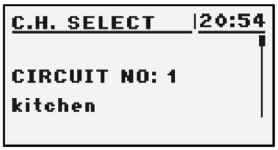

MODULATION Mo 20:54
65.3 70°
ON
CENTRAL HEATING
HOT WATER
BUFFER
BOILER
SETTINGS
BURNER
ALARMS
SOLAR
INFO
6.1 Heating
page 41
6.2 Hot water
page 44
6.3 Buffer
page 46
6.4 Boiler
page 47
6.5 Settings
page 48
6.6 Burner
page 50
6.7 Alarms
page 52
6.8 Solar
page 58
6.9 Info
page 59

12.1 Heating



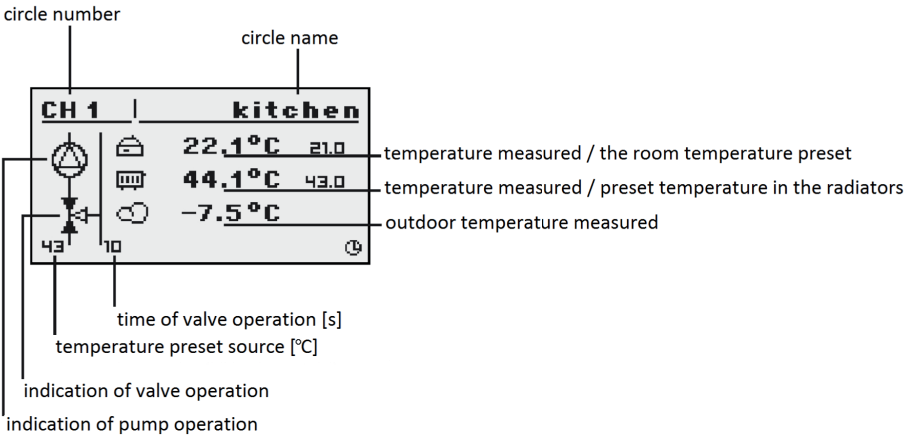
12.1.1 Selection of circuit

Allows you to select a number of central heating circuit. The selection of the circuit make arrows.



12.1.2 State

Allows you to monitor the status of central heating system.



12.1.3 Settings

Function	Description
Comfortable temp.	Desired temperature in the room during the heating.
Programme	Programs: a. time - according to preset intervals b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat d. economic - in the rooms temperature is maintained the economic
Economic temp.	Desired temperature in the room outside the period of heating.

12.1.4 Time program

Used to configure the time program steering central heating..

Description of the adjustment time program refer to chapter 10.4.

12.1.5 Service

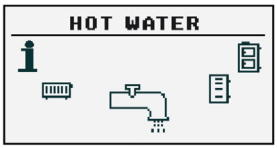
WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
Comf. MAX pump temp.	Maximum outdoor temperature at which the circulating pump can work in a comfortable range.
Econ. MAX pump temp.	Maximum outdoor temperature at which the circulating pump can work in a economic range.
MIN Tch pump	Minimum temperature calculated for central heating at which the circulating pump can be operated.
Source	Specifies the source of energy for central heating circuit.
Temperature MAX	Maximum temperature for central heating.
Mixer time	Time of full opening of the mixer.
Hot water priority	Priority for hot water of the heating circuit. During heating hot water the central heating pump is not working.
Pump test	Starts the pump regardless of other conditions.
Mixer test	Starts the mixer motor independently of the other conditions.
Circ. name	Gives name for the central heating circuit.

Function	Description
CH temp. for -20°C	The point of the heating curve for -20°C.
CH temp. for 0°C	The point of the heating curve for 0°C.
CH temp. for 10°C	The point of the heating curve at 10°C.

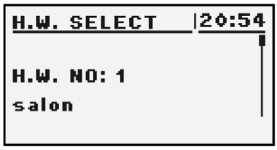
Service	
CH temp. for corr. factor	Central heating temperature correction required the desired room temperature for 1 º C. For example, if the correction factor is set at 6°C, room temperature set at 20°C and measured in the room is 20.5°C then the temperature calculated at will be reduced by 3°C.
Mode type	Specifies the input mode central heating temperature: manual - the temperature of central heating inflicted manually, weather - the temperature of central heating calculated from the heating curve.
Manual Tch	The desired temperature of central heating when the mode is set to manual.
Room temp. sensor	Specifies whether the system uses a room sensor.
CH temp. sensor	Specifies whether the system uses a sensor heating.
Permanent pump	Yes - the pump runs at a given temperature in the room, reduced the temperature for heating (only with the use of a sensor for central heating and room sensor), No - after reaching the set temperature in the room the pump is turned off.

12.2 Hot water



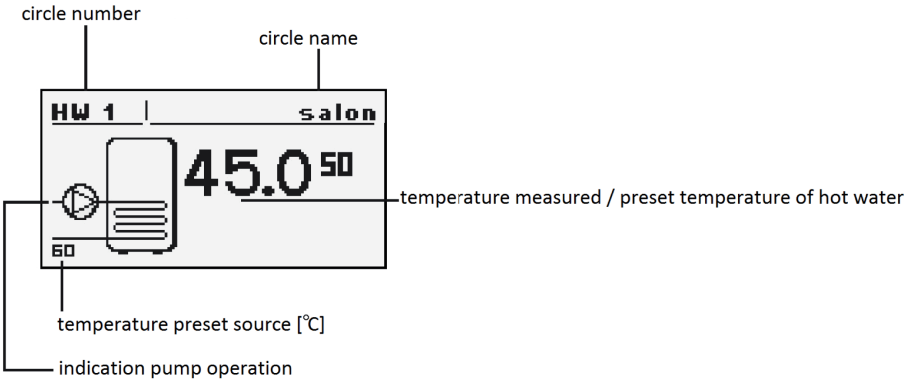
12.2.1 Selection of circuit

Allows you to select the number of hot water circuit.



12.2.2 State

Allows you to monitor the status of hot water.



12.2.3 Settings

Function	Description
Comfortable temp.	Desired temperature of hot water during heating.
Programme	Set the mode a circuit: a. time - according to preset ranges b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat.
Heat now	Heats hot water once to a comfortable temperature regardless of the program.
Hysteresis	The value of which can reduce the temperature of hot water.
Economical temp.	Desired temperature of hot water outside the period of heating.

12.2.4 Time program

Used to configure the time steering hot water preparation.

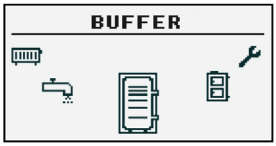
Description of the adjustment time refer to chapter 10.4.

12.2.5 Service

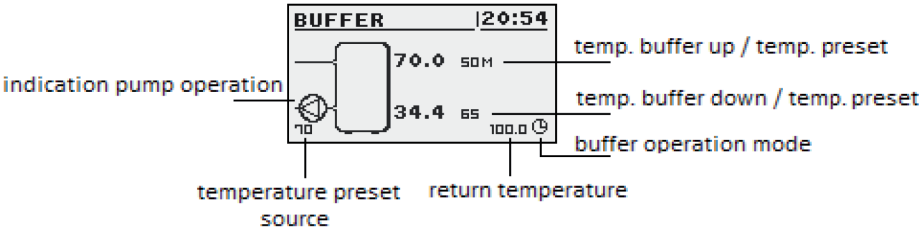
WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
Source delta	Increasing the temperature of the source of the desired temperature of hot water during heating.
Source	Specifies the source of energy for hot water.
Temperature MAX	Maximum temperature of hot water.
Delta MIN temp.	The minimum temperature difference between the source and the hot water at which the pump can work.
Pump test	Starts the pump regardless of other conditions.
Circ. name	Gives name for the hot water circuit.

12.3 Buffer (option available only with external module CAN)



12.3.1 State



12.3.2 Settings

Function	Description
Upper set temperature	Below this temperature in the upper part of the buffer starts charging.
Lower set temperature	Above this temperature at the bottom of a buffer completes the process of charging.
Programme	Constant - the buffer is charged regardless of the time, time - the buffer charged only at specified intervals. Intervals are set in the „time program", disabled - off charging buffer.

12.3.3 Time program

Used to configure time program to controlling charging buffer.

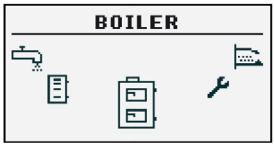
Description of program adjustment time refer to chapter10.4.

12.3.4 Service

WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

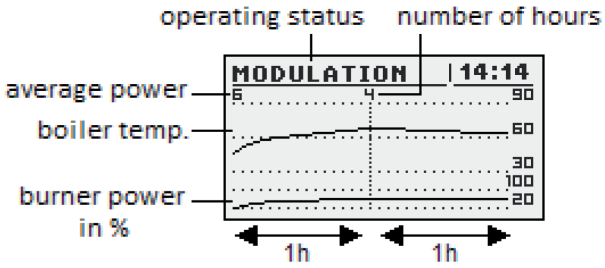
Function	Description
Minimal pump temp.	The minimum temperature in the upper part of the buffer at which the circulating pump can work for central heating.
Auto upper temp.	Specifies whether the upper temperature buffer (minimum) is requested manually or automatically. Automatically based on the needs of other power consumers in the buffer.

12.4 Boiler



12.4.1 State

Statistics of the boiler in the past 24 hours. The graph shows the temperature of the boiler and power of burner. „Hours" refers to how many hours ago the boiler behaved these operating parameters. Across the screen are displayed statistics of 2 hours. Screens switching buttons „up" and „down".



12.4.2 Settings

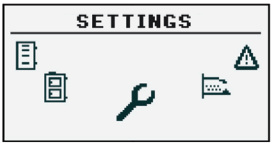
Function	Description
Boiler temp. set	Heating water temperature in the boiler which will be maintain the controller. Menu is active only in continuous work mode.

12.4.3 Service

WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
MIN pump temp.	The temperature above which the the controller can attach pumps.
Mode	Operating mode of boiler: a. auto - temperature calculated automatically b. continuous - the temperature is kept constant
Hysteresis	The temperature of the boiler must be reduced by this value to launch the burner.
MIN return temp.	Minimal return to boiler temperature maintain by mixer.
Return mixer time	Specifies the time of full opening of the return mixer.
Boiler pump test	Starts boiler pump regardless of other conditions.
Return mixer test	Starts actuator of the return mixer regardless of other conditions.

12.5 Settings



12.5.1 Date and time

Using this menu is made to set the date and time of the driver.

12.5.2 Language

Use this menu to select language of the menu.

12.5.3 General settings

12.5.3.1 Alarm buzzer

We define here, if the driver shall notify of alarms by acoustic signal.

12.5.4 Service

WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

12.5.4.1 Module configuration

Menu is used to configure the CAN network. In the menu, select the modules that are connected to the system.

WARNING!
A detailed description of the modules and their destination are described in the manual of expansion modules.

SUMMARY OF THE EXPANSION MODULES	
Module	Description
Module no. 0	3 heating circuits of the numbers 2,3,4. Outdoor temperature sensor.
Module no. 1	3 heating circuits of the numbers 5,6,7.
Module no.2	3 heating circuits of the numbers 8,9,10.
Module no 3	3 heating circuits of the numbers 11,12,13.
Module no 4	3 heating circuits of the numbers 14,15,16..
Module no 5	Buffer. Solar collectors. Hot water no. 2. Return temperature sensor.
Module no 6	Not used.
Module no 7	Not used.
Module Lambda	Module of the Lambda sensor.

12.5.4.2 System configuration

Menu is used to configure the heating system (hydraulic). The possibility of settings is dependent of number of expansion modules connected in the system.

WARNING!
You must first configure the modules..

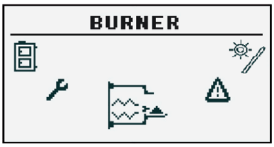
SYSTEM CONFIGURATION	
Function	Description
Number of CH circuits	Specifies the number of heating circuits in the system.
Number of HW circuits	Specifies the number of hot water circuits in the system.
Number of buffers	Specifies the number of buffors in the system.
Outside temp. sensor	Specifies if in the system is installed outside temperature sensor (module 0).
Return temp. sensor	Specifies if in the system is installed return temperature sensor (module 5).
Solars	Specifies if the system is equipped with solar collectors.

12.5.4.3 Restore to factory settings

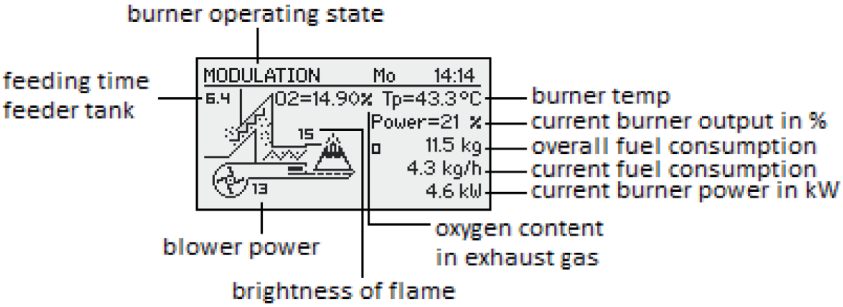
This function allows the controller to restore the factory settings.

WARNING!
Will be restored all factory settings, which can cause your system to malfunction.
After restoring the factory settings may be need to reconfigure the controller settings.

12.6 Burner



12.6.1. State



12.6.2. Settings

Function	Description
Feed fuel now	Starts fuel feeding screw regardless of other features.
Burner on	Consent to work of the burner.
Fuel type	Specifies the type of fuel.

12.6.3. Service

WARNING!
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
Air MIN (20%)	Minimum amount of air during modulation where power of burner is 20% or power number is 1.
Air MAX (100%)	Maximum amount of air during modulation where power of burner is 100% or power number is 2.
Feeding MAX (100%)	Maximum time during fuel feeding when power of modulation is 100% or power number is 2 on every 20 seconds.
Power MIN (FL2)	Minimal burner power during modulation.
Power MAX (FL2)	Maximal burner power during modulation.
Modulation type	Burner mode, power modulation or two power levels.
Photo threshold	Brightness in the the burner over which is recognized as a fire.
Igniter test*	Turn on igniter for testing.
Heater feeder test*	Turn on burner feeder for testing.
Storage feeder test*	Turn on storage feeder for testing.
Blower test*	Turn on blower for testing.
Test fuel mass	Fuel mass obtained during continuous fuel feeder work through 1 hour (in kg).
Fuel calorific value	Fuel calorific value (in kWh/kg).
Lambda control	Determine whether regulator consider or not oxygen concentration.
Oxygen MIN (20%)	Oxygen target for minimal power.
Oxygen MAX (100%)	Oxygen target for maximal power.
Fuel start dose	Feeding time in order to iqnite fuel.

* testing equipment in the menu “BURNER” is only possible when the controller is in the OFF mode.

12.7 Alarms

This menu contains a history of up to 20 alarms that occurred during the controller work. The importance of alarm codes was presented in table below.

12.7.1. Alarm codes

CODE	Short description	Explanation
1	Processor overheating	Procesor overheating. The reason may be improper installation location of the controller.
2	No fire / fuel	The controller detected a lack of flame in the burner. The reason could be the end of the fuel or the flame goes out.
3	Burner overheating	The temperature of the burner has reached its maximum value!ą!
4	Boiler sensor shorted	The controller detected shorted boiler temperature sensor. The reason may be damaged sensor or connection cable.
5	Boiler sensor open	The controller detected open boiler temperature sensor. The reason may be damaged sensor or connection cable.
6	Burner sensor shorted	The controller detected shorted burner temperature sensor. The reason may be damaged sensor or connection cable.
7	Burner sensor open	The controller detected open burner temperature sensor. The reason may be damaged sensor or connection cable.
8	Boiler overheating	Boiler temperature has exceeded the maximum value!
9	Processor reset	Probable damage the controller! Possible to loss of power supply.
10	STB	
11	Communication with module 0	
12	Communication with module 1	
13	Communication with module 2	
14	Communication with module 3	
15	Communication with module 4	
16	Communication with module 5	
17	Communication with module 6	
18	Communication with module 7	
19	HW sensor shorted	

CODE	Short description	Explanation
20	HW sensor open	
21	Room temp. sensor shorted	
22	Room temp. sensor shorted	
23	Quenching error	
24	Lambda communication	
25	Solars overheating	
26	Solars freezing	
The codes of the modules		
33	Shorted IN1 Module 0	
34	Shorted IN2 Module 0	
35	Shortede IN3 Module 0	
36	Shorted IN4 Module 0	
37	Shorted IN5 Module 0	
38	Shorted IN6 Module0	
39	--	
40	--	
41	--	
42	--	
43	Zwarcie IN11 Module 0	
44	--	
45	Open IN1 Module 0	
46	Open IN2 Module 0	
47	Open IN3 Module 0	
48	Open IN4 Module0	
49	Open IN5 Module 0	
50	Open IN6 Module 0	
51	--	
52	--	
53	--	
54	--	
55	Open IN11 Module0	
56	--	
57	--	
58	Overheating Module 0	

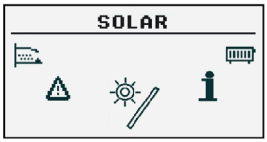
CODE	Short description	Explanation
65	Shorted IN1 Module 1	
66	Shorted IN2 Module1	
67	Shorted IN3 Module 1	
68	Shorted IN4 Module 1	
69	Shorted IN5 Module 1	
70	Shorted IN6 Module 1	
71	--	
72	--	
73	--	
74	--	
75	--	
76	--	
77	Open IN1 Module1	
78	Open IN2 Module 1	
79	Open IN3 Module 1	
80	Open IN4 Module 1	
81	Open IN5 Module 1	
82	Open IN6 Module 1	
83	--	
84	--	
85	--	
86	--	
87	--	
88	--	
89	--	
90	Overheating Module 1	
97	Shorted IN1 Module 2	
98	Shorted IN2 Module 2	
99	Shorted IN3 Module 2	
100	ShortedIN4 Module2	
101	Shorted IN5 Module 2	
102	Shorted IN6 Module 2	
103	--	

CODE	Short description	Explanation
104	--	
105	--	
106	--	
107	--	
108	--	
109	Open IN1 Module 2	
110	Open IN2 Module 2	
111	Open IN3 Module 2	
112	Open IN4 Module 2	
113	Open IN5 Module 2	
114	Open IN6 Module 2	
115	--	
116	--	
117	--	
118	--	
119	--	
120	--	
121	--	
122	Overheating Module 2	
129	Shorted IN1 Module 3	
130	Shorted IN2 Module 3	
131	Shorted IN3 Module 3	
132	Shorted IN4 Module 3	
133	Shorted IN5 Module 3	
134	Shorted IN6 Module 3	
135	--	
136	--	
137	--	
138	--	
139	--	
140	--	
141	Open IN1 Module 3	
142	Open IN2 Module 3	
143	Open IN3 Module 3	

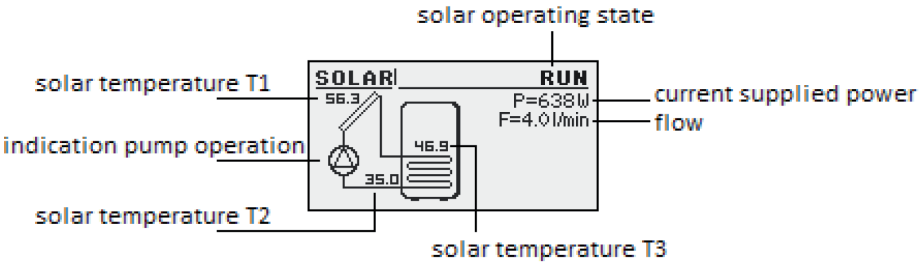
CODE	Short description	Explanation
144	Open IN4 Module 3	
145	Open IN5 Module 3	
146	Open IN6 Module 3	
147	--	
148	--	
149	--	
150	--	
151	--	
152	--	
153	--	
154	Overheating Module 3	
161	Shorted IN1 Module 4	
162	Shorted IN2 Module 4	
163	Shorted IN3 Module 4	
164	Shorted IN4 Module 4	
165	Shorted IN5 Module 4	
166	Shorted IN6 Module 4	
167	--	
168	--	
169	--	
170	--	
171	--	
172	--	
173	Open IN1 Module 4	
174	Open IN2 Module 4	
175	Open IN3 Module 4	
176	Open IN4 Module 4	
177	Open IN5 Module 4	
178	Open IN6 Module 4	
179	--	
180	--	
181	--	
182	--	
183	--	

CODE	Short description	Explanation
184	--	
185	--	
186	Overheating Module 4	
193	Shorted IN1 Module 5	
194	Shorted IN2 Module5	
195	Shorted IN3 Module5	
196	Shorted IN4 Module 5	
197	--	
198	Shorted IN6 Module 5	
199	Shorted IN7 Module 5	
200	Shorted IN8 Module 5	
201	Shorted IN9 Module 5	
202	--	
203	--	
204	--	
205	--	
206	Overheating Module 5	

12.8 Solar (option available only with external module CAN)



12.8.1 State



12.8.2 Settings

Function	Description
Turn on delta	Temp. difference between solar and accumulator needed for solar pump turn on.
Turn off delta	Temp. difference between solar and accumulator needed for solar pump turn off.

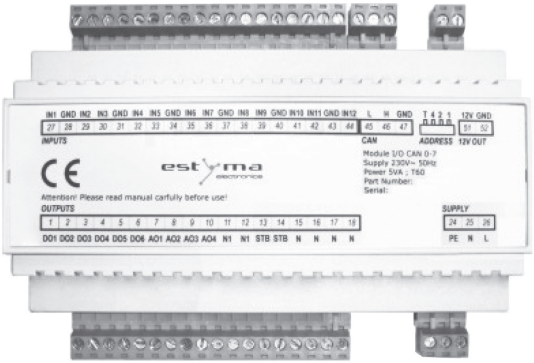
12.8.3 Service

Function	Description
Schematic	Solar system schematic.
Flow [l/min]	Heating fluid flow in l/min.
Fluid specific heat	Specific heat of heat-transfer fluid [kJ/ (kg*K)].
MAX HW temp.	Over this hot water temp. solar pump is turn off.
Solar alarm temp. MAX	Maximal temp. of solar collector. Alarm and damage preservation procedure are taken over this temp.
Solar alarm temp MIN	Minimal temp. of solar collector. Alarm and antifreeze procedure are taken under this temp.
Solar pump test	Allow for solar pump testing.

12.9 Info

There you will find useful information about the controller, including the version of software.

13. Expansion of the system - CAN bus


IN1 GND IN2 IN3 GND IN4 IN5 GND IN6 IN7 GND IN8 IN9 GND IN10 IN11 GND IN12 L H GND T 4 2 1 12V GND
27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 51 52
INPUTS
CAN
ADDRESS
12V OUT
Module I/O CAN 0-7
Supply 230V~ 50Hz
Power 5VA ; T60
Part Number:
Serial:
Attention! Please read manual carfully before use!
OUTPUTS
SUPPLY
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
24 25 26
DO1 DO2 DO3 DO4 DO5 DO6 AO1 AO2 AO3 AO4 N1 N1 STB STB N N N N
PE N L

The controller is equipped with a high bandwidth CAN bus used to communicate with the modules. Thanks to the well-known for their reliability, widely used in automotive bus system is expandable to the highest level.

Use of CAN bus carries several advantages. Gain above all the possibility of using broadband Lambda oxygen sensor and the using additional of expansion modules rozszerzeniowych I / O we can install throughout the system:

– to 16 are heating circuits,

– 2 circuits of hot water,

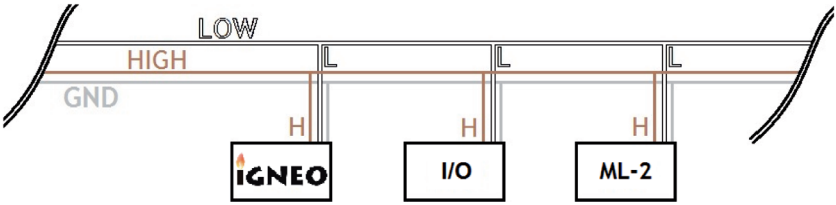
– heat storage tank (buffer),

– solar system (solars).

Socket CAN bus is on the left side of the device. Connecting cable must be connected according to the following designation.

Cable connection:
L – line LOW (white) **H** – line HIGH (brown) **GND** – ground (grey)

For connections on the CAN bus should be only used cable **LiYCY 2x0,25**. Only this type of cable gives the proper work of devices. Connections perform in a serial manner, this represents a figure below.



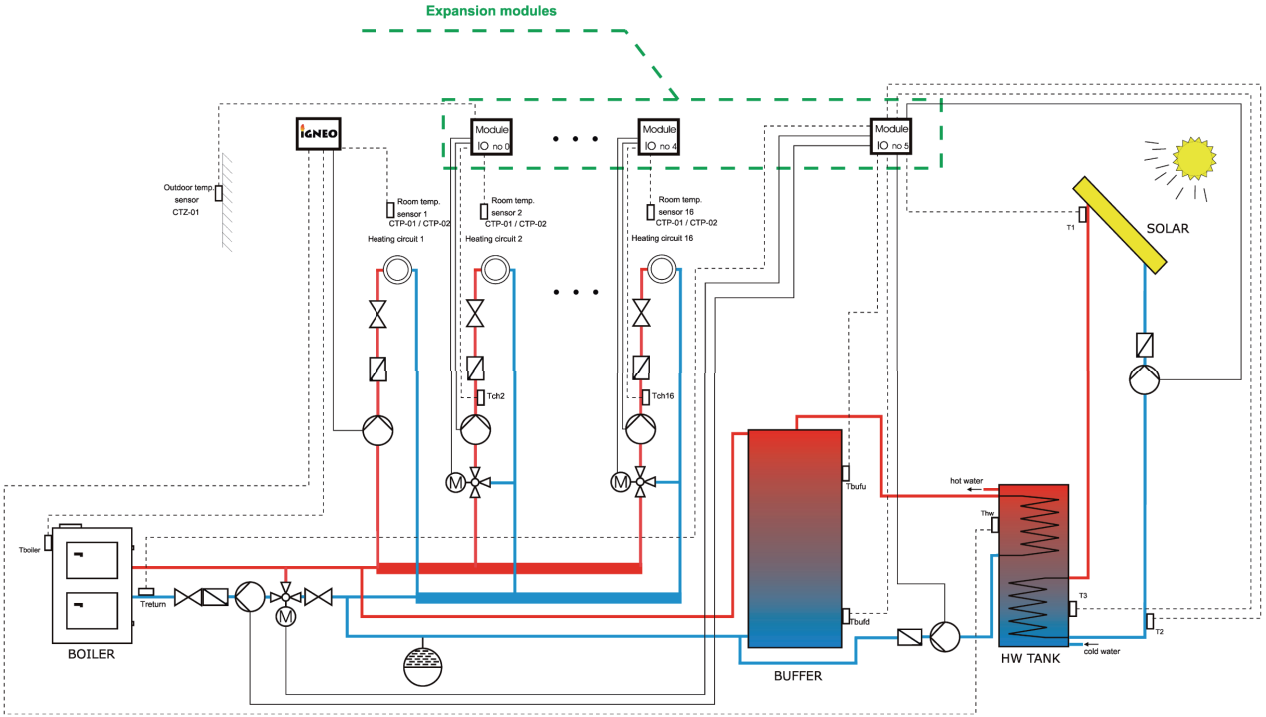
Plugging in expansion modules you need to remember to correctly set the terminator, which should be attached only at the last module throughout the system, even if the module is the only one.

After performing all the connections you must configure the module settings. Make this by selecting the modules that are connected to the network. More about the configuration each of expansion modules can be found in chapter 6.5.4.1 and instruction of the enlargement module I/O.

After finishing configuration of expansion modules to do remains only a change the system settings. Menu is used to configuration the heating system and the possibility of settings is dependent of number of arranged expansion modules. The table describing the functions refer to chapter 6.5.4.2.

On the next page is a sample diagram of the system. Please note that this is only overhead view, not containing all the elements of the system.

IMPORTANT!
Scheme does not include all elements of the system.



13.1 Sonda Lambda

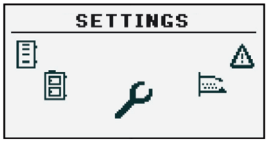
Lambda sensor we can connect to the system in two ways:

– directly to the controller, if the entire system with CAN bus module will only use Lambda oxygen sensor,

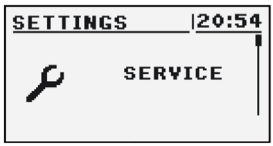
– through enlargement module I/O with the number 5, if in the system there are other modules enlargement.

After connecting the module configure the controller yet. For this purpose, proceed as explained below.

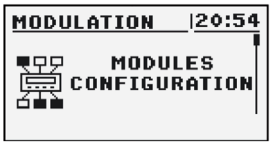
From the main menu select **SETTINGS**



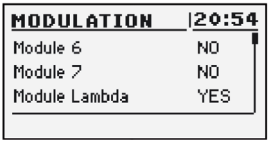
Then in the mode **SERVICE** enter the access code



After inputting the correct code, run the **MODULES CONFIGURATION**

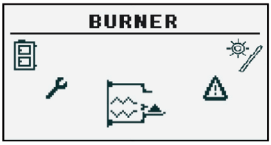


Find **Lambda Module** and turn it on by changing the option to **YES**

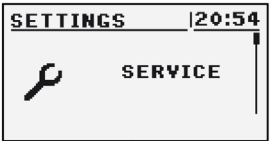


At this point, turned on the module Lambda. The second step is a change the configuration settings for the burner.

From the main menu by selecting **BURNER** we get to the settings.

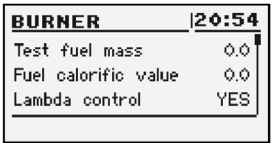


Here you can again enter the mode **SERVICE** and if required, enter the access code.



In the list, you can locate the position **Lambda control,** which switches on **YES**.

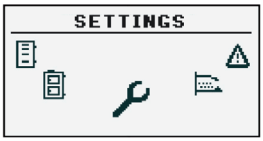
It is also possible working with switched off Lambda control mode. Then Lambda oxygen sensor module will be responsible only for displaying the measurements.



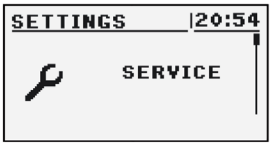
13.2 Solars

Solar collectors are supported only by enlargement module I/O number 5th. After performing all the connections you must configure the controller to work with collectors proceed as described below. The first step is to enable module number 5.

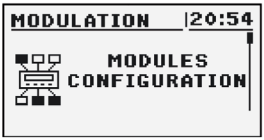
From the main menu select **SETTINGS**



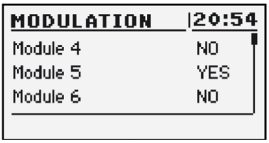
Then in the mode **SERVICE** enter the access code



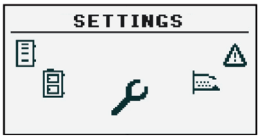
After inputting the correct code, run the **MODULES CONFIGURATION**



Find **Module 5** and activate it by changing the settings to **YES**

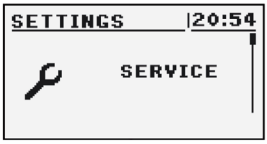


Now enable the solar handling. As the main menu select **SETTINGS** and then enter the access code in the **SERVICE** mode

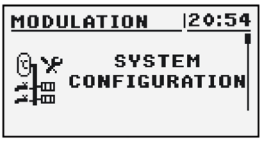


Now enable the solar handling.

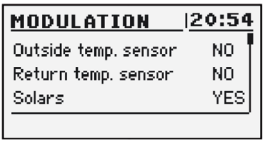
As the main menu select **SETTINGS** and then enter the access code in the **SERVICE** mode



After entering the code run **SYSTEM CONFIGURATION**



Find the position **Solars** and activate them by changing the settings to **YES**



After finishing configuration the controller we can start to change the adjustment and settings for Solars. Description of the configuration these elements can be found in chapter12.8.

14. Specification

Technical data	
Module supply voltage	~230V/50Hz ±10%
Power input (module)	<6VA
Temperature measurement accuracy	±4ºC
Sensors	NTC 10kΩ B25/85=3877K±0,75% VISHAY BC components
Ambient temperature	0-60 °C
Moisture	5-95% non-condensing
Software class	A
Module output load capacity	
CH pump	100W
HW pump	100W
Igniter	400W
Blower	150W
Burner feeder	150W
Feeder tank	150W

EKO-VIMAR ORLAŃSKI Sp. z o.o.

48-385 Otmuchów, ul. Nyska 17b
POLSKA / woj. opolskie
T +48 77 400 55 80-81, 400 55 91
F +48 77 439 05 03, 400 55 96
E biuro@orlanski.pl

www.orlanski.pl